

WHAT IS CLAIMED IS:

1. A stamp detecting device comprising:

an image input section which inputs an image of a letter having at least one stamp affixed thereto; and

5 a stamp detecting section which detects a stamp by determining a gap area as an internal area of the stamp if the size of the gap area is within a preset permissible range in a case where the gap area which is partly determined as an external area of the stamp is present in an area which is determined as the internal area of the stamp affixed to the letter based on the image input from said image input section.

2. The stamp detecting device according to claim 1, wherein said stamp detecting section derives a projection value of one of density and luminance based on an image input from said image input section, determines an internal area of the stamp according to a stamp internal area threshold value with respect to the projection value, determines an external area of the stamp according to a stamp external area threshold value with respect to the projection value, and determines whether or not the gap area lies within a preset permissible range according to a gap permissible value with respect to the size of the gap area.

25 3. The stamp detecting device according to claim 2, further comprising a control section which changes conditions of the stamp internal area threshold

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value, stamp external area threshold value and gap permissible value based on the size of the stamp detected by said stamp detecting section and causes said stamp detecting section to perform the stamp detecting process again.

- 5        4. A letter processing apparatus comprising:  
            an image input section which inputs an image of a  
            letter having at least one stamp affixed thereto;  
            a stamp detecting section which detects a stamp by  
            determining a gap area as an internal area of the stamp  
            if the size of the gap area is within a preset  
            permissible range in a case where the gap area which is  
            partly determined as an external area of the stamp is  
            present in an area which is determined as the internal  
            area of the stamp affixed to the letter based on the  
            image input from said image input section;  
            a stamp identifying section which identifies a  
            type of the stamp detected by said stamp detecting  
            section;
- 10        20        a stamp face value calculating section which  
            derives a total face value of the stamps affixed to the  
            letter based the type of stamp identified by said stamp  
            identifying section; and  
            a sorting section which sorts the letter based on  
            the total face value of the stamps derived by said  
            stamp face value calculating section.
- 15        25        5. The letter processing apparatus according to

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claim 4, wherein said stamp detecting section derives a projection value of one of density and luminance based on an image input from said image input section,  
determines an internal area of the stamp according to a  
5 stamp internal area threshold value with respect to the projection value, determines an external area of the stamp according to a stamp external area threshold value with respect to the projection value, and determines whether or not the gap area lies within a  
10 preset permissible range according to a gap permissible value with respect to the size of the gap area.

6. The letter processing apparatus according to claim 5, further comprising a control section which changes conditions of the stamp internal area threshold value, stamp external area threshold value and gap  
15 permissible value based on the size of the stamp detected by said stamp detecting section and causes said stamp detecting section to perform the stamp detecting process again.

20 7. A letter processing apparatus comprising:  
an image input section which inputs an image of a letter having at least one stamp affixed thereto;  
a stamp detecting section which detects a stamp  
affixed to the letter based on one of a density  
25 projection value and luminance projection value derived according to the image input by said image input section;

a stamp identifying section which identifies the type of stamp detected by said stamp detecting section;

5 a stamp face value determining section which derives a total face value of the stamps affixed to the letter based on the type of the stamp identified by said stamp identifying section; and

10 a sorting section which sorts the letter based on the total face value of the stamps derived by said stamp face value determining section.

15 8. The letter processing apparatus according to claim 7, wherein said identifying section identifies a type and affixed orientation of the stamp by collating a pattern of the stamp detected by said stamp detecting section with a plurality of standard patterns previously prepared for respective rotational positions of the stamp.

20 9. The letter processing apparatus according to claim 7, which further comprises a memory section which previously stores noticed area specifying information used for specifying a noticed partial area at the time of identification of the stamp by said stamp identifying section and in which said stamp identifying section identifies the type of stamp by collating a pattern of the stamp detected by said stamp detecting section with a plurality of previously prepared standard patterns only in a partial area specified by the noticed area specifying information stored in said

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memory section.

10. The letter processing apparatus according to  
claim 7, wherein said stamp identifying section  
identifies an affixed orientation of the stamp detected  
5 by said stamp detecting section, changes the  
orientation of the noticed partial area based on the  
identified affixed orientation and then identifies the  
type of the stamp.

10 11. The letter processing apparatus according to  
claim 7, which further comprises a memory section which  
previously stores types of total face values of  
permissible stamps; and a total face value determining  
section which determines a total face value of stamps  
by collating total face value amounts stored in said  
15 memory section with a total face value derived by said  
stamp face value determining section and in which said  
sorting section sorts the letter based on the total  
face value determined by said total face value  
determining section.

20 12. The letter processing apparatus according to  
claim 7, which further comprises a determining section  
which determines whether the total face value derived  
by said stamp face value determining section is  
adequate or not and an imprinting section which  
25 postmarks the letter based on position information of  
the stamp detected by said stamp detecting section when  
it is determined by said determining section that the

total face value derived by said stamp face value determining section is adequate and in which said sorting section sorts the letter based on the total face value of the stamps derived by said stamp face  
5 value determining section when it is determined by said determining section that the total face value derived by said stamp face value determining section is adequate.

13. A stamp detecting method comprising:

10 inputting an image of a letter having at least one stamp affixed thereto; and

detecting a stamp by determining a gap area as an internal area of the stamp if the size of the gap area is within a preset permissible range in a case where  
15 the gap area which is partly determined as an external area of the stamp is present in an area which is determined as the internal area of the stamp affixed to the letter based on the image input in said image inputting step.

20 14. A letter processing method comprising:

inputting an image of a letter having at least one stamp affixed thereto;

detecting a stamp by determining a gap area as an internal area of the stamp if the size of the gap area  
25 is within a preset permissible range in a case where the gap area which is partly determined as an external area of the stamp is present in an area which is

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determined as the internal area of the stamp affixed to the letter based on the image input in said image inputting step;

5 identifying the type of stamp detected in said stamp detecting step;

deriving a total face value of the stamps affixed to the letter based on the type of the stamp identified in said identifying step; and

10 sorting the letter based on the total face value of the stamps derived in said deriving step.

15. A letter processing method comprising:

inputting an image of a letter having at least one stamp affixed thereto;

15 deriving a density projection value based on the input image;

detecting a stamp affixed to the letter based on the thus derived projection value;

identifying the type of the detected stamp;

20 deriving a total face value of the stamps affixed to the letter based on the type of the stamp thus identified; and

sorting the letter based on the thus derived total face value of the stamps.

25 16. The letter processing method according to claim 15, wherein said stamp type identifying step identifies the type and affixed orientation of the stamp by collating a pattern of the stamp detected by

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said stamp detecting step with a plurality of standard patterns previously prepared for respective rotational positions of the stamp.

17. The letter processing method according to  
5 claim 15, wherein said stamp type identifying step identifies a type of the stamp by collating a pattern of the stamp detected by said stamp detecting step with a plurality of previously prepared standard patterns only in a partial area specified by noticed area  
10 specifying information previously stored in a memory section and used for specifying a noticed partial area at the time of identification.

18. The letter processing method according to  
claim 15, wherein said stamp type identifying step  
15 identifies the affixed orientation of the stamp detected by said stamp detecting step, changes the orientation of the noticed partial area based on the identified affixed orientation and then identifies the type of stamp.

20 19. The letter processing method according to  
claim 15, which further comprises determining a total  
face value of stamps by collating total face value amounts determined based on the types of permissible  
total face value amounts of the stamps previously  
25 stored in a memory section with a total face value derived by said stamp face value determining step and in which said sorting step sorts the letter based on

the total face value determined by said total face value determining step.

20. The letter processing method according to claim 15, which further comprises determining whether  
5 the total face value of the stamps derived by said stamp face value determining step is adequate or not and postmarking the letter based on position information of the stamp detected by said stamp detecting step when it is determined by said  
10 determining step that the total face value derived by said stamp face value determining step is adequate and in which said sorting step sorts the letter based on the total face value of the stamps derived by said stamp face value determining step when it is determined  
15 by said determining step that the total face value of the stamps derived by said stamp face value determining step is adequate.

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